



## Research Article

## Screening of Visually Impaired Children for Health Problems

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## SUMMARY

**Purpose:** Disability is a significant problem and is accepted globally as a health priority in childhood. Like nonvisually impaired children, visually impaired children also need to use health services during childhood. The purpose of this study was to determine the health problems of visually impaired children. **Methods:** A descriptive design was used. The subjects were 74 children with visual impairment attending primary school (aged 5–14 years), who agreed to participate and whose parents gave permission. Data were collected via physical examination including questionnaires and a physical assessment form. The health screening included physical measurements for height, weight, blood pressure, dental health, hearing, and scoliosis.

**Results:** The mean age of children was  $10.43 \pm 2.9$  years. When the health screening results of children were examined, it was found that 25.7% of the children were overweight or obese, 35.1% of them had dental problems, 27.0% had hearing problems, and 39.2% had scoliosis risk. Systolic and diastolic blood pressures were normal in 91.8% and 93.2% of the children, respectively.

**Conclusions:** These findings showed the important role of school health nurses in performing health screenings directed at visually impaired children who constitute a special group for school health services. Health screening for height, weight, dental health, hearing, and scoliosis is suggested for visually impaired children.

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## Introduction

Disability is accepted as a significant public health problem and is considered a priority among health services [1]. Visual disability considerably affects the productivity and life quality of individuals. There are 285 million people with visual disability; 90.0% of them live in developing countries, and 3.0% are children [2]. In Turkey, there are 38,355 children (9.3%) with visual disabilities in public and private schools [3]. In Turkey, the rate of disabled individuals benefiting from health services is 55.7%; this ratio is 59.0% for visually disabled children [1].

Impaired vision from birth or early childhood can have profound impact on an infant or child's development with adverse consequences for mental health, restricting participation in social, physical, educational, and, later, employment opportunities [4]. The majority of children with severe visual impairment (6/60 or worse) have additional sensory, motor, or learning impairments with or

without chronic disease [5]. Due to visual impairment, difficulties become apparent in school performance and other functions such as ability to safely participate in sports. In addition, visual impairment can affect quality of life and the effects are often life-long [6].

Visual disability appears as a factor affecting school success, health perception, development of self-responsibilities regarding health, and accessing health services in children and adolescents [2,7,8]. For this reason, the problems of visually disabled people have to be considered during childhood, and health screening should be performed [9,10].

Disability is one of the most important and universal health priorities in childhood. Disabled individuals need to benefit more from health services; however, access is still limited due to insufficient health services intended for their disability, coexistence of other health problems, increased problems and insufficiencies in self-care, and difficulties in expressing health problems [1,2]. When compared to nonvisually impaired children, visually impaired ones have similar or higher risk for some of these health problems.

In the literature, there is no screening study that looks at the wide range of health problems affecting the visually impaired.

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Previous screening studies were particularly relevant to specific fields such as dental health, obesity, scoliosis, and psychosocial development [7,11,12]. Screening programs are carried out with a team approach in school health services. Nurses perform an important role in administering these services [10,13,14]. When the health of disabled people is considered, one of the important responsibilities of nurses is to determine other health problems which are specific to particular age groups which may accompany disability [1]. For this reason, carrying out the health screening of visually impaired children, like nonvisually impaired ones, as a part of school health services becomes more of an issue. This present study will provide awareness in the evaluation of health of special groups such as disabled persons, take required precautions for health problems of visually impaired children at an earlier age, and guide nurses working in this field.

The aim of this study was to determine health problems through screening visually impaired school-aged children.

## Methods

### Study design

This study was a descriptive design for finding to health problems in visually impaired children.

### Setting and sample

This study was performed in a primary school for the visually impaired (Visual impairment is a decreased ability to see to a degree that causes problems not fixable by usual mean. The term includes both partial sight and blindness [15]). In Turkey, a primary school includes children from kindergarten to grade eight (aged 5–14 years). All children attended primary school for the visually impaired from kindergarten to grade eight were included in the study ( $N = 99$ ). Parents who stated that their children were receiving services from a special doctor for monitoring health problems refused to participate. So, the sample consisted of 74 children who, with parental approval, agreed to participate in the study.

### Ethical consideration

This study was approved by the Ethical Committee of the Faculty of Medicine, Ankara University (decision no. 25-503), the review board of the Turkish Republic Ministry of Education and school management. Initially, a voluntary informed consent form were sent to the parents; children whose parents agreed to participate were selected. An informed consent form was read to the children participating in the study. In this way, verbal and written approval was obtained. The results of the screening were informed to parents and the parents of children who had problems were advised to consult a health center.

### Instruments

Data were collected through a physical examination which included a questionnaire and physical assessment form. The questionnaire was composed of two sections: The first section included questions related to sociodemographic features of children such as age, gender, economic status, chronic diseases, and regular drug use. The second section included questions related to eye health, nutritional habits, dental health, hypertension, ear/hearing health, and signs related to scoliosis. Each section was composed of open and close-ended questions. The physical

assessment form was prepared to record the results of the health screening conducted among children.

An informed consent form, and questionnaire including questions about family health status were sent to the parents of participating children. Student information related to academic success and nonattendance were obtained from teachers. Information that could not be obtained from children and their parents was acquired from either school health nurses or recordings.

Children were invited to the health office for screening procedures one by one at a time determined by their teachers. Screening was performed by one of the researchers. Before the present study, the researcher had training and practice about screening during nursing education.

The health screening of each student took approximately 25 minutes. The screening items included height and weight, blood pressure, dental health, hearing, and scoliosis measurements.

### Height and weight

Children's weight was measured by electronic scales ( $\pm 100$  g sensitivity); height was measured using a portable stadiometer. During the measurements, children removed their shoes and outer clothing. After their weight was measured, the resulting value was rounded up to the nearest 0.1 kg. During height measurements, children stood with their backs to the stadiometer, removed their shoes, and stood upright with their heels touching. Similarly, the resulting value was rounded up to the nearest 0.1 cm.

After the measurements, children's body mass index was calculated. Children's body mass index with respect to age and gender was evaluated with the percentile curves developed by Neyzi and colleagues for Turkish children [16]. Those who were between the 3rd and 97th percentile curve were evaluated as healthy.

### Blood pressure

The children were told to rest for 15 minutes before which their blood pressure was measured by a sphygmomanometer placed on the right arm. Two measurements were made using the same method and same researcher. After 15 minutes from the first measurement, a second measurement was performed. The measurements were evaluated according to age and gender. With regard to blood pressure, children found to be either in the low or high categories were considered at risk. The low blood pressure is below 50th percentile (for systolic 100 mmHg, diastolic 60 mmHg); the high one is above 95th percentile (for systolic 132 mmHg, diastolic 92 mmHg). Below 90th percentile is normal, 90th–95th percentile is prehypertension, above 95th percentile is hypertension [9,17,18].

### Dental screening

For evaluating dental [19] health, the decayed, missing, and filled teeth (dmft/DMFT) was used and then evaluated the primary teeth (dmft) and permanent teeth (DMFT) was used. The World Health Organization suggests that individuals younger than 30 years old should have a dmft score of 3 or less. Therefore, children with less than 3 were considered as having "no dental health problem", whereas a score of 3 or higher was determined as having "dental health problem [19]".

### Hearing screening

The hearing screening involved the human voice and a whispering test. During the test, breath was exhaled 30–45 cm away

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